

Antimicrobial Coating for Metallic Surfaces, Phase I

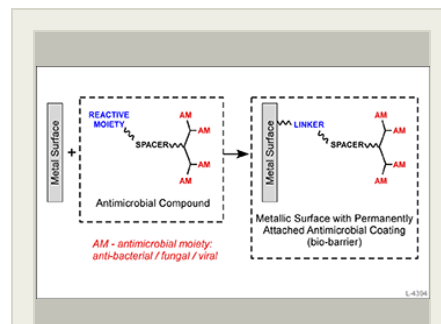
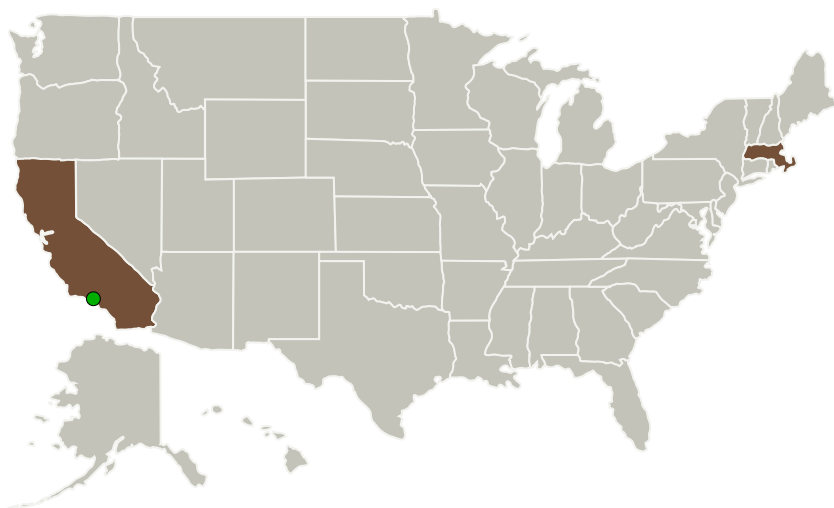
Completed Technology Project (2017 - 2017)



Project Introduction

NASA needs innovative technologies to protect biological sensors and to prevent contamination of extraterrestrial bodies such as Europa, Enceladus or Mars. Physical Sciences Inc. (PSI) will develop novel broad spectrum antimicrobial (ABFV: anti-bacterial/fungal/viral) coatings for the exposed surfaces of spacecraft metals, plastic, and electronics that will act as a bio-barrier to prevent both forward and backward contamination. The technology will offer a complementary and milder approach to the current, energy intensive sterilization methods such as heat processing, gamma/electron beam irradiation, cold plasma and vapor hydrogen peroxide. In addition, these current technologies only provide a one-time sterilization. The PSI approach is a permanent coating that will prevent inadvertent contamination throughout the spacecraft assembly and integration. The Phase I work will build upon PSI's previous efforts that developed highly efficacious and broad spectrum antimicrobial (ABFV: anti-bacterial/fungal/viral) finishes for textile surfaces. During the Phase I work, PSI will synthesize ABFV compounds that permanently attach to the surface of metallic materials such as aluminum and stainless steel. PSI will demonstrate high efficacy and broad spectrum antimicrobial activity of the treated metallic surfaces as well as compatibility with current sterilization processes. In a potential Phase II, PSI will further demonstrate the technology at a scale relevant to spacecraft applications. In addition, PSI will extend the use of the new antimicrobial technology to other spacecraft hardware materials such as polymers, electronics and composites and demonstrate the ABFV treatment on representative pieces of spacecraft hardware.

Primary U.S. Work Locations and Key Partners



Antimicrobial Coating for Metallic Surfaces, Phase I Briefing Chart Image

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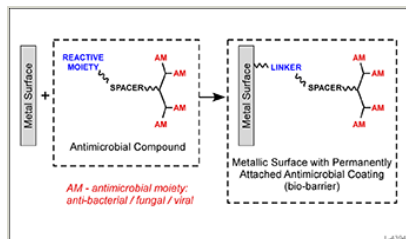


Organizations Performing Work	Role	Type	Location
Physical Sciences, Inc.	Lead Organization	Industry	Andover, Massachusetts
● Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations

California	Massachusetts
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Images



Briefing Chart Image

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(<https://techport.nasa.gov/image/135218>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Physical Sciences, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

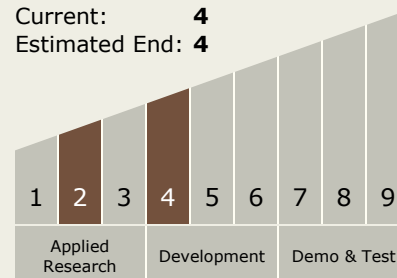
Carlos Torrez

Principal Investigator:

Dorin V Preda

Technology Maturity (TRL)

Start: 2
Current: 4
Estimated End: 4



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Technology Areas

Primary:

- TX04 Robotic Systems
 - └ TX04.6 Robotics Integration
 - └ TX04.6.2 Modeling and Simulation for Robots

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System